REMARKS

Claims 1-8, 10-28, 30 were presented for examination. Claims 2, 3, 14, 21, 29 have been amended. Claims 9, 29 have been withdrawn from consideration as directed to nonelected species. However Claim 9 should be added back if its base claim is allowed. Claim 29 has been amended to depend from Claim 25 and thus should be examined. Reconsideration is respectfully requested.

The informalities in Claims 3, 21 have been corrected.

Claims 2, 14, 15 are rejected under 35 USC 112, second paragraph, as indefinite for the phrase "and other erroneous" which has been deleted to obviate the rejection.

Claims 1-8, 10-15, 23-25, 30 are rejected under 35 USC 102(a) as anticipated by Pavlou. This rejection is respectfully traversed.

As to Claims 1, 4, 6, 7, 11, 13, 23, the Examiner states that Pavlou shows a method and apparatus with a 3-layer back propagation neural network, a gas sensor array, and a hybrid intelligent model expert system. However, this is not Applicant's claimed invention.

Applicant's Claims 1, 11, and 23 recite "an algorithm which intelligently adapts to an individual entity" as described on pages 2-3, 22, 28, 38, 39, 44. This feature is not shown or suggested by Pavlou.

Applicant's algorithm which intelligently adapts to an individual entity whose condition is being monitored, as recited in the claims, is designed to deal with the problem of variation between individuals. Two people may have the same chemical marker signature, e.g. pentane, but have different conditions, e.g. one has more severe diabetes than the other. Two people may have the same condition, e.g. diabetes, and yet

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have very different chemical marker signatures, e.g. different levels of pentane. Applicant teaches and claims method and apparatus which includes an algorithm to use information about the individual to eliminate this problem.

By contrast, Pavlou is dealing with a different situation, which does not require Applicant's solution. Pavlou is trying to discriminate between six different bacteria based on odor detection. Known samples of the six bacteria are prepared, and this information is used to identify an unknown sample. H. pylori was identified against other bacteria, not by an algorithm that is individualized to the entity, but by comparison to data obtained from other sources or entities.

The Examiner cites page 341, col. 1, lines 1-5, and page 340, col. 2, last paragraph, as indicating that Pavlou is applicable to determining a condition of a patient and addresses the need for smart breath and clinical analyzers. However, these are merely general statements about directions and goals of the industry. Pavlou does not actually show this. Pavlou indicates in the background that odor detection of disease has been recognized since ancient times, and that H. pylori is related to disease. But Pavlou does not give any indication of disease, but only identifies the presence of H. pylori. From Pavlou's information, one could not determine if a patient has any disease. It would require applicant's contribution to monitor what condition the H. pylori indicates.

Pavlou describes a totally different type of algorithm, a "genetic" algorithm. Pavlou employs "adaptive learning" (page 336, col. 2) which is directed to allowing the neural network to speed up the process of calculation. The adaptive learning rate of Pavlou achieves minimum computational errors by not overshooting the optimal weights while avoiding too small steps that take too much time. It is the learning rate from the

algorithm that is adaptive. This has nothing to do with adapting to the entity as done by Applicant.

To support a proper 102 rejection, the reference must show each and every feature claimed. Pavlou clearly does not show the type of algorithm taught and claimed by Applicant so the rejection of the base claims and any dependent claims fails. Further, other features of the dependent claims are also not shown by Pavlou.

In particular, as to Claims 2, 5, 14, 25, the Examiner states that Pavlou discloses a 3-layer neural network and a correction algorithm for eliminating noise and errors which is "consistent" with Applicant's "fuzzy filter system." As to fuzzy filters, the Examiner is purely speculating; there is not the slightest hint or suggestion in Pavlou of using fuzzy filters in combination with a neural network, as Applicant teaches and claims. The fuzzy filters and the genetic algorithm are not two different implementations of the same function. Applicant's fuzzy filters reduce the complexity of the neural network architecture to achieve better generalization for prediction through reduction of the number of neurons needed to characterize the system whereas Pavlou's genetic algorithm did not aim at reducing the number of neurons. One entity may require a more complex architecture to characterize that entity and another entity may require a simpler architecture. The use of Applicant's fuzzy filter system allows such entity adaptation. Pavlou's genetic algorithm could not achieve such purpose as Applicant teaches and claims.

Again, to support a proper 102 rejection, the reference must show each and every feature. The fuzzy filter is totally lacking in Pavlou. Claim 5 recites generally a fuzzy filter system, Claim 25 more specifically recites that fuzzy filters are associated with at

least one of the input layer and a hidden layer. Claim 29 has been amended to depend from Claim 25 and further recites at least two hidden layers and at least the nodes of the second hidden layer are fuzzy filters. These features are not found in Pavlou.

Also, Claim 13 recites training the neural network with calibrated data from an individual person, and Claim 15 recites performing the environmental correction by fitting a minimum of three measured points to a pre-established washout curve for each marker, neither of which is shown by Pavlou.

Therefore it is submitted that the rejection of Claims 1-8, 10-15, 23-25, 30 under 35 USC 102(a) over Pavlou has been obviated.

Claims 1-8, 10-17, 21-25, 27, 30 are rejected under 35 USC 103(a) over Pavlou taken with Phillips. Pavlou is applied as above, and to Claim 21, and Phillips is used for the extra features of Claims 16, 17, 22, 27. This rejection is respectfully traversed. The combination still does not contain the algorithm that adapts to the individual which is contained in all the claims. Pavlou does not and neither does Phillips.

To the contrary, as indicated in the prior response and as noted by the Examiner in the prior action, Phillips compares the data from patients with a disease to data from a set of 50 normal patients. Thus, there is no individualization by obtaining a baseline from the patient himself.

Since a feature contained in each base claim is not taught or suggested by the primary reference Pavlou or the secondary reference Phillips, the rejection of dependent claims, on Pavlou alone or with Phillips, also fails. Therefore the rejection is obviated.

As to Claim 27 the Examiner states that Phillips discloses an apparatus for detection of volatile markers (artificial olfactory system) with a heated breath reservoir. In

Phillips only the breath collector, not the detector as in Claim 27, is heated. Phillips (col. 10, lines 63-67) uses a gas chromatograph and mass spectrometer (GCMS) which is not an artificial olfactory system but a standard chemical analysis tool. GCMS is a key-and-lock system with each component spectral line representing one chemical whereas an artificial olfactory system is a non-key-and-lock system achieving recognition through collective response signatures with each sensor responding to possibly more than one chemical. So it does not appear that it is properly combinable with Pavlou since they are different systems.

Claims 1-8, 10-25, 27, 30 are rejected under 35 USC 103(a) over Pavlou taken with Phillips, as above, in view of Matteucci, Kanety, which are used for the features of Claims 18-20. Again, this rejection is respectfully traversed since none of the references, alone or in combination, show Applicant's claimed adaptive algorithm.

As to Claims 18-19, Matteucci is added to show blood glucose measurement. However, Matteucci measures markers in the blood or urine (page 1183, col. 1), not the breath. Thus, again, there is no basis for combining this reference with the others since they are directed to entirely different approaches. Further, Claim 18 recites predicting glucose rise before an actual rise, which is not shown by Matteucci.

As to Claim 20, Kanety is added to show using markers to diagnose overeating. But Kanety detects insulin receptors from animal tissue, not breath, so again there is no basis to combine.

Claims 23-28 are rejected under 35 USC 103(a) over Pavlou with Phillips, as above for Claims 23-25, 27, in view of Lewis, which is used for the microwave oven of

Claims 26, 28. Again, this rejection is respectfully traversed since none of the references, alone or in combination, show Applicant's claimed adaptive algorithm.

In summary none of the references show the claimed invention. Pavlou is missing an essential feature and none of the other references show this feature. Accordingly it is submitted that all the rejections have been obviated.

A petition and fee for a two-month extension of time are submitted herewith.

Accordingly it is submitted that all claims now present in the case are in condition for allowance which is earnestly solicited. If any impediment should remain which can be resolved by telephone, please contact Applicant at (415) 370-4355.

Respectfully submitted,

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